EA Number: **NM-060-2004-159** Serial No.: Preparer: Michael L. McFerraz			Action Type: Saltcedar/Russian-Olive Eradication Project Name: Roswell Field Office Saltcedar control/eradication		
Resource / Activity	**Not Present**	**Not Affected**	****May Be Affected**	**Reviewer**	**Date**
Air Quality*			√	/s/ Michael McGee Hydrologist	11/12/04
Floodplains*			√		
Soils/Watershed			√		
Water Quality- Drinking/Ground*			√	/s/ Michael McGee Hydrologist/Geologist***	11/12/04
Vegetation			√	/s/ Helen C.J. Miller Rangeland Management Spec	11/22/2004
Livestock Grazing			√		
Invasive, Nonnative Species*			√	/s Helen C.J. Miller Range Mgmt Spec/Nox. Weed Spec	11/22/2004
Wastes, Hazardous or Solids*				Hazardous Waste Spec.	
Prime/Unique Farmlands*	X			Irene M. Gonzales Realty Specialist	11/09/2004
Lands/Realty/ROW		X			
Fluid Minerals		√		Pet Eng/Geologist/Sur. Prot. Spec.	
Mining Claims		√		/s/ Jerry Dutchover Geologist	11/09/04
Mineral Materials		√			
Threatened or Endangered Species*			X	/s/ D Baggao Wildlife Biologist	11/15/04
Wetlands/Riparian Zones*			X		
Wildlife Habitat			X		
Native American Religious Concerns*		X		Archaeologist	10/27/04
Cultural Resources*			X		
Areas of Critical Environmental Concern*			X	J Howard Parman Planning & Env. Coordinator	11/17/04
Low Income & Minority Population Concerns		X			
Wild/Scenic Rivers*	X			***Bill Murry*** Outdoor Recreation Planner/NRS	11/1/04
Wilderness*	X				
Cave/Karst Resources			X		
Outdoor Recreation		X			
Visual Resources			X		
Access/Transportation		**X**		Richard G. Hill Environ. Prot. Spec.	11/24/04

* "Critical Element" - must be addressed in all NEPA documents.

** "Affected Element" - must be addressed in the attached Environmental Assessment.

*** "Hydrologist/Geologist" – Hydrologist will be the primary lead for "Water Quality- Drinking/Ground" with Resource projects such as fire, fuels, and grazing EA's etc… The Petroleum Geologist will be the primary lead for "Water Quality- Drinking/Ground" with Minerals or oil and gas projects such as Application For Permit To Drill and Sundry Notices etc...

Environmental Analysis

Roswell Field Office Saltcedar (*Tamarix* spp.) and Russian-Olive (*Elaeagnus angustifolia L.*) Control/Eradication
NM-060-2004-159

Location:

Bureau of Land Management, Roswell Field Office, Chaves, Lincoln, Quay, Guadalupe, Curry, Roosevelt, and De Baca counties

Prepared by:
Michael McFerraz
Fuels Module Leader

September 9, 2004

Bureau of Land Management
Roswell Field Office
Roswell, New Mexico

Roswell Field Office Saltcedar and Russian-Olive Control/Eradication
Environmental Analysis
NM-060-2004-159

Outline/Table of Contents

1. Soils
    - Mechanical Removal
    - Non- Mechanical Removal
2. Floodplains
    - Mechanical Removal
    - Non- Mechanical Removal
3. Areas of Critical Environmental Concern (ACECs)
4. Water Quality – Drinking/Ground
    - Surface Water
        - Mechanical Removal
        - Non-Mechanical Removal
    - Groundwater
        - Mechanical Removal
        - Non- Mechanical Removal
5. Air Quality
6. Vegetation/Noxious Weeds/Riparian-Wetlands
7. Wildlife Habitat/Special Status Species
8. Cultural and Historical Resources
9. Rangeland Management
10. Visual Resources Management
11. Cave and Karst Features

B. Impacts of the Alternatives
C. Mitigation Measures and Residual Impacts
    1. Proposed Action
    2. No Action Alternative
D. Cumulative Impacts

V. Persons or Agencies Consulted

References

I. Introduction

A. Background Information

The Bureau of Land Management (BLM) - Roswell Field Office (RFO) encompasses seven counties in southeast New Mexico. The counties are Chaves, Lincoln, Quay, Guadalupe, Curry, Roosevelt, and De Baca. This land area is about 13.9 million surface acres, of which 1.49 million is public land administered by the BLM. The largest tracts of public land are found in Chaves and Lincoln County.

The Roswell Resource Management Plan (RMP) and Record of Decision, which guides the long term management of the public land within the RFO, was approved in October 1997. Within the RMP are decisions concerning Vegetation Management, Watershed Management, Special Status Wildlife and Plant Species, Wildlife Habitat, Fire and Pest Management.

Of concern, across several resource values addressed in the RMP, is the invasive and non-native plant species, Saltcedar (*Tamarix spp.)*. Saltcedar was first introduced as an ornamental plant to the eastern United States from southern Europe, northern Africa, and eastern Asia as early as the 1820's. The expansion of this invasive weed began during the late 1800's into rivers and streams in the southwestern United States. It was introduced to New Mexico between 1900 and 1940 to facilitate water transportation, reduce flooding and sedimentation, and to enhance irrigation return flows (Graf, 1978; Robinson, 1965; Duncan and McDaniel, 1998). Since then, saltcedar has invaded most, if not all, areas where surface and subsurface water occurs. Currently, saltcedar has infested approximately 500,000 acres in New Mexico. If it is left unchecked with a 3-7 percent growth increase, saltcedar will have infested between 650,000 to over 900,000 acres of by 2013. Approximately 30,000 acres of saltcedar occurs on public land administered by the RFO.

Saltcedar is extremely prolific and can out-compete most native vegetation (Everitt, 1980). Each saltcedar tree can produce as many as 500,000 seeds in a growing season. The reproductive season for saltcedar runs from early April to late October. Seed can germinate within 24 hours in moist soil, and has seed viability of up to 5 weeks from dispersal. Saltcedar also reproduces by tillering.

Saltcedar typically extracts salt from the soil substrate and excretes it through the leaves (evapotranspiration). During the fall, plant material collects on the soil surface which in turn further increases concentration of salt. This concentration increase may inhibit the establishment and growth of native vegetation (Sharroth *et al*., 1995; Smith *et al*., 1998).

Saltcedar is a fire-adapted species (Busch and Smith 1993). Once fire occurs in a saltcedar stand, the stand resprouts as short shoots referred to as "doghair" because of the dense regrowth. This results in an increase in fuel densities and a substantial increase in fire danger. Because saltcedar stands can develop extremely high fuel loads, wildfire in saltcedar presents a hazard to people and property (Racher and Britton, 2003). With the high reproductive capability, a burned stand may become reinfested following a fire within a few growing seasons. On mature plants, the root system is dominated by a root crown extending 12-18 inches below the soil surface (McDaniel *et al*., 2000).

B. Need for the Proposed Action

The need for the proposed action is to improve riparian and floodplain health and function, range and watershed conditions, and enhance wildlife habitat for a variety of terrestrial and aquatic species, by dramatically reducing the amount of saltcedar and Russian-olive on public land within the RFO. Saltcedar has increased to the extent that other desirable shrubs, grasses and forbs are no longer available or have become sparse. Ground cover is reduced, exposing more of the soil to erosion and reducing the productivity of ecological sites.

This project is warranted in light of the State of New Mexico's effort to control salt cedar on private and State land along the Pecos River. In September 2002, about 9,100 acres of land were chemically treated by helicopter along the Pecos River from Ft. Sumner south to Carlsbad. Saltcedar and Russian-olive control is needed on public land to enhance the control efforts initiated by the State of New Mexico.

C. Conformance with Land Use Plans:

The proposed activity is addressed as part of the Roswell Resource Management Plan and Record of Decision (October 1997), and the New Mexico Record of Decision dated July 1991, for the *Vegetation Treatment on BLM Lands in Thirteen States*, Final Environmental Impact Statement of May 1991.

In addition the proposed action is in conformance with the Fire and Fuels Management Plan Amendment and Environmental Assessment (EA) approved on September 16, 2004. The Plan Amendment adjusts nine Resource Management Plans in eight Field Offices in New Mexico and Texas.

The amendment incorporates current national fire management policy into Resource Management Plans, with the goals of:

- Restoring fire as an integral part of fire-adapted ecosystems.
- Reducing hazardous fuels to improve the protection of human life and property.
- Establishing consistent methods of managing fire and fuels.

The Plan Amendment:

- Establishes Field Office wide objectives for fire and fuels management.
- Delineates fire management units and fire management categories.
- Identifies broad vegetation treatments. Identifies general restrictions on fire management practices.
- Determines the criteria for changing fire management units.

D. Relationship to Statues, Regulations, or Other Plans:

The control of saltcedar as a range improvement, either under Cooperative Agreement or Range Improvement Application, is addressed under the 43 Code of Federal Regulations,

Parts 4100, Grazing Administration, Exclusive of Alaska, Subpart 4120.3.

Other Statues, Regulations or Plans are:

- The Taylor Grazing Act of 1934, as amended (43 U.S.C. 315 (a)-®),
- The Federal Land Policy and Management Act of 1976, as amended (Pub. L. 94-579, 43 U.S.C. 1702 et seq), sections 302 (a) & (b), Section 502 (a) & (c),
- The Public Rangelands Improvement Act of 1978, as amended (Pub. L. 95-514, 43 U.S.C. 1901 et seq),
- The National Environmental Policy Act of 1969, as amended (Pub. L., 91-190, 42 U.S.C. 4321-4347) Sec. 101,
- Carlson-Foley Act of 1968,
- Federal Noxious Weed Act of 1974, as amended (Management of Undesirable Plants on Federal Lands, 1990 Sec.15),
- The Final Supplemental Environmental Impact Statement for Noxious Weeds, 1987,
- The Clean Water Act of 1977, section 404,
- BLM Manual 9014, and
- BLM Manual 9015.

II. Proposed Action and Alternatives

The proposed action is to control saltcedar and Russian-olive where it has been identified as requiring treatment on public land throughout the Roswell Field Office area, and other holdings in cooperation with other private stakeholders, State and federal agencies. This action would be conducted by utilizing the appropriate best management practice (mechanical, chemical, prescribed fire, or biological methods). Racher and Britton (2003) describes that any management program that utilizes a single treatment at only one point in time will most likely fail. Therefore, this proposed action would utilize the different methods of saltcedar and Russian-olive removal/eradication as a combination. As proposed treatment areas are identified, the best management practice will be determined for that area. Currently, the best management practice for the proposed action would include, but is not limited to the following combinations:

- Mechanical removal, piling, or windrowing of saltcedar followed by the prescribed fire of the piles/windrows and chemically controlling the resprout/regeneration that may occur,
- Prescribed fire applied to a saltcedar stand followed by chemically treating the resprout/regeneration,
- Chemically treating a saltcedar stand (See II. B. 2.) followed by mechanical or prescribed fire to remove standing dead material,
- Biological technique followed by mechanical removal and/or continued use of biological techniques for the control of resprouts/regeneration of saltcedar.

As a part of this proposed action, following the removal of saltcedar, an aggressive restoration program would be implemented (See II. D.). The removal methods and restoration techniques would be determined by the treatment locations and saltcedar density. In all instances or methods used, a diligent effort will be made to contact all right-of-way holders that may be affected prior to any treatments.

Whenever saltcedar is mentioned throughout this environmental assessment, Russian-olive eradication/removal would be a part of the proposed action when contained within the identified treatment area.

A. Mechanical Removal

Mechanical removal may range from light chainsaw removal with hand crews to heavy machinery work. With heavy machinery removal, the differentiation between methods is whether only foliar vegetation is removed or the majority of the plant system (foliar and roots) is extracted or disrupted. The proposed action is not limited to these forms of control; as such, any new mechanical equipment (e.g. grinders, brush hogs) or treatment method (process or sequence) that is available would be considered.

1. Chainsaw Removal (Cut-Stump Treatment) – Low to Medium Density Areas

Handcutting with chainsaws would be conducted year-round, depending on the availability of personnel. The aerial growth of saltcedar trees would be removed with approximately three feet of stump left standing to facilitate re-treatment with an

approved herbicide. Vegetation (slash) would be removed from the site by either prescribed fire or chipping.

2. Excavator Removal – Medium to High Density Areas

An excavator with a specially-designed bucket would be used to extract the plants from the soil with as much root mass intact as possible and with minimal soil attached to the root system. The special bucket is an open-ended backhoe bucket with a v-notch and hydraulic "thumbs" on a boom with a 30-foot reach. Associated equipment includes fuel trailer, personal vehicle for operator, and transport.

The plant is extricated with an upward motion with most of the large roots intact and with minimal soil disturbance. As the plants are uprooted, most of the soil passes through the bucket and falls back into place. The plant is then piled or windrowed with a swing of the excavator arm to the side of the excavator.

It is expected that only one pass would be required through a treatment area and gradual turns would be made with both tracks versus braking one side as with bulldozing which churns up the soil surface. Extracated saltcedar would be piled or windrowed away from any stream or river bank.

In any area where the bank is steep, saltcedar would be placed on top of the cut bank in piles, to remove it from the channel. In areas where the floodplain widens, salt-cedar would be piled or windrowed within the floodplain but away from the bank. On the uplands, saltcedar would be pulled and dropped in place since trees and clumps are scattered. Movement to individual trees would be planned to minimize travel distance and surface disturbance by the tracked excavator.

3. Dozer Removal - High Density Areas

A root plow would be pulled by a D-7 or larger class bulldozer to sever the root crown from the remaining roots. Associated equipment would include fuel trailer, personal vehicle for operator, and transport vehicle. Several passes through an area may be required due to density. Because the soil is churned during the plowing action, root material is reburied upon making passes through an area. A dozer-mounted root rake is then used to gather severed plant material. Woody material removed by the dozer and root rake would then be gathered and placed into piles by heavy machinery for burning. An experienced operator can clear an average of 3,000-4,000 plants/acre at the rate of about 6 acres/day (McDaniel *et al*., 2003).

4. Discing - Low to Medium Density Areas

A disc would be pulled behind a farm tractor or other capable machinery depending on the size the disc. This is conducted in areas where cottonwoods *(Populus* spp.*)* reside because they have a deeper and heavier root system than saltcedar seedlings. Saltcedar can be controlled while preserving native seedlings through light discing (Smith et al., 2002). On a saline site, light discing in July can control saltcedar

seedlings and promote saltgrass (*Distichlis spp.),* rhizomes in moister soil substrates (Bosque del Apache NWR, unpublished data; Taylor and McDaniel, 2003).

This method may be used as subsequent treatment in areas previously treated to control saltcedar seedlings over a wide area. Its use may be limited by terrain or re-establishment of native plants that may be churned up.

B. Non-Mechanical Removal

1. Prescribed Fire

The use of prescribed fire to control saltcedar may be utilized as an initial treatment or as a follow-up treatment after an initial treatment (i.e. mechanical removal, herbicide, biological or flooding). It would be conducted according to (1) the availability of firing and holding resources, (2) reasonably low fire activity, and (3) seasonal weather conditions that would be favorable to achieve the desired objectives.

The specifics of the prescribed fire would be determined by the fuel type and the saltcedar densities associated with the project area and outlined in the necessary Burn Plan. The objectives required for a successful burn would include: (1) saltcedar reduction and control of greater than 85%, (2) sustained control of re-growth, (3) invigorate native vegetation, and (4) firefighter and public safety. Racher et al. (2003) reports that objective one is possible with an average canopy cover reduction of 74 to 91 percent.

The re-growth of surviving saltcedar is rapid following prescribed fire, and the post-fire water use appears to be higher (Racher et al., 2003; Busch and Smith, 1993). Therefore, prescribed fire would not be utilized as the sole reduction technique in heavily invaded areas.

Saltcedar piles and windrows, created by mechanical removal, would be kept relatively small for future burning with low fire intensity, and to allow for accessibility by BLM fire personnel (engines, hose lays, etc.) during the burning operation. Some re-arrangement of extricated saltcedar with heavy equipment into piles may be required, depending on the density of saltcedar and the needs of the BLM hazardous fuels reduction specialist to conduct a clean burn (e.g., front end loader with grapple attachment).

In the future, land within the RFO area may be categorized as "fire use areas," areas requiring the approval of a fire management plan and a prescribed burn plan. Fire use categorization would utilize fire return intervals and Wildland Urban Interface concerns in the establishment of "fire use areas."

2. Herbicide Treatments

Herbicide application on saltcedar would be conducted via aerial, hand or from ground-based-equipment. As of the date of this proposed action, imazapyr is the only approved herbicide for use on saltcedar, but the BLM would consider utilizing any future approved herbicides for the control and erradiation of saltcedar. Only products

which are approved and authorized for use on public lands by BLM and EPA would be used. All label requirements would be strictly adhered to. All herbicide treatments would be applied as per the Roswell Management Plan (1997), Appendix 9. All herbicide application on public land would be conducted by a licensed and approved applicator or contractor.

According to BASF (2003), imazapyr is the active ingredient that provides the best management technique for saltcedar. Imazapyr inhibits the enzymatic functions of the tree to cause it to exhaust its food and energy reserves. It is a weak acid, and it is not a mutagen, terratogen, carcinogen or an endocrine disrupter (BASF, 2003). According to research conducted by BASF (2003), imazapyr concentrations were found to be practically not-toxic to birds, fish and aquatic invertebrates, and only slightly toxic to algae and diatoms. A worst-case risk assessment, which incorporates estimated environmental concentrations based on the U.S. Environmental Protection Agencies worst-case criteria, indicated that applications for aquatic vegetation management will not result in an unreasonable risk to the environment (BASF, 2003). These results are supported by a number of research/extension field trials in New Mexico that found imazapyr, when applied alone or in combination with a glyphosate, controlled saltcedar to levels of 90% or greater (Duncan and McDaniel, 1998). Glyphosate acts synergistically with imazapyr and can be utilized to lower the operation costs of herbicide application, but glyphosate alone provides a poor control on saltcedar (McDaniel et al., 2000).

DRASTIC ANALYSIS

For any site proposed for pesticide (herbicide) treatment, the potential for groundwater contamination would be evaluated with the Environmental Protection Agency (EPA) rating system, DRASTIC (Aller et al. 1985). Factors that will be studied further include: pesticide solubility, mobility, speciation, and degradation, and highly localized recharge areas. A detailed DRASTIC analysis would be prepared for all pesticide treatment projects developed under this EA prior to pesticide treatment project implementation and prior to a decision being made on each of the proposed pesticide treatments. The Drastic Analysis for each proposed pesticide treatment would be included with the Documentation of Land Use Plan Conformance and National Environmental Policy Act (NEPA) Adequacy (DNA) review and decision document. A DNA would be prepared for each proposed Saltcedar pesticide (herbicide) treatment project.

a. Hand Treatments (Back-pack Sprayer or All Terrain Vehicle)

The use of back-pack sprayers would be utilized as a post-treatment in conjunction with mechanical removal, prescribed fire removal or some other form of removal as outlined in this environmental assessment. The use of back-pack sprayers would offer a high level of application control. After an approved initial treatment method, back-pack sprayers would be used to treat re-sprouts or new growth by applying the label regulated amount of herbicide to the aerial growth.

After mechanically removing aerial growth via chainsaws, the remaining stump

would be cut flush (at ground level) and chemically treated with an approved herbicide (e.g. Imazapyr) according to the label. Herbicide application is more effective when utilized prior to the first frost (Duncan and McDaniel *et al*., 1998). It is during this time that the tree is storing reserves into its root system. The herbicide would be applied by spraying with a back-pack sprayer or ATV (All Terrain Vehicle)-mounted sprayer, or painted with a brush onto the stump for transport into the root system. Saltcedar has the ability to seal the cut surface within 15 minutes. Therefore, the herbicide must be applied within 10-15 minutes after cutting (Duncan, 2003). Re-treating new growth or re-sprouts in the future would be conducted on a 2-3 year basis, depending on the success of the initial treatment of herbicide.

The use of ATV's could be used as a pre/post-treatment to mechanical treatment or prescribed fire. ATVs would generally be used in treatment areas which contain large numbers of plants or in areas which have widely scattered pockets of saltcedar. Pre-treatment would require spraying an approved herbicide onto foliage of saltcedar, and allowing 2-3 years after application before mechanical or prescribed fire treatment to ensure root kill.

A follow-up treatment with herbicide may be utilized depending on the response saltcedar has to the initial treatment.

b. Aerial Application

The aerial application of an herbicide would be used in project areas which are large, widely spread or are uneconomical to treat by either hand or ground based equipment.

The herbicide would be sprayed in such a fashion as to allow "very little" to no drip onto the soil surface. This can be accomplished with appropriate nozzle size, speed of application, spray pattern, open versus closed canopy, and type of aircraft used.

<u>Fixed-wing aircraft vs. Helicopter Applications</u>

Fixed-wing aircraft require a landing strip or airport to refuel and refill product. Support vehicles are not typically required on-site since the aircraft would most likely return to an airstrip or airport. Product may be pre-mixed in a tanker truck for loading.

Helicopter application would also use a pre-mix tanker to load from with the flexibility of having the tanker located on-site or very near the project area. As the product is dispensed, the aircraft may land atop a tanker and reload while running hot. This is repeated until the treatment is complete.

When either fixed-wing aircraft or helicopter is equipped with the right spray systems, both are equally successful. The disadvantage of the fixed-wing is that it cannot perform as precise of a spray pattern as the helicopter. Fixed-wing aircraft

may be used in areas where large monotypic stands exist. Therefore, an alternative to fixed-wing aircraft application would be to use a helicopter in areas where rivers or streams are nearby and a precise application is extremely vital.

Follow-up treatment would be conducted by mechanically removing and/or burning the remaining vegetation. Re-treating with herbicide may be required until all regeneration or new sprouts have been eradicated.

C. Biological Control

The use of biological control within this proposed action would be to utilize either insect control or animal control on saltcedar. The BLM does not limit itself to these two types. As other forms of biological control may present themselves in the future, the BLM may opt to use one of those forms.

Currently, the success rate of insect control is limited due to the number of insects that have been authorized for release by the Technical Advisory Group for Biological control Agents of Weeds (TAG) and the USDA Animal Plant Health and Inspection Service, Plant Protection and Quarantine (APHIS). The Release permits were issued during July and August after a Finding of No Significant Impact was signed July 1999 (Milbrath et al., 2003).

Mammals like goats have been effectively utilized to control such invasive weeds as leafy spurge *(Euphorbia esula)*, Canada thistle *(Cirsium arvense),* bull thistle *(Cirsium vulgare)*, hemlock *(Cicuta douglasii)* and starthistle *(Centaurea* spp.), and the BLM would consider the use of goats or other mammals as a means to control or eradicate saltcedar as a part of this proposed action.

1. Insect Control

The proposed action is to release *Tamarix*-specific insects into isolated sites within the RFO. Two of the insects could be 1) an insect from Israel whose nymphs and adults suck sap from the smaller stemmed plants (*Trabutina mannipara*, mealybug), and 2) an insect from central Asia whose adults and larvae feed on the foliage of saltcedar (*Diorhabda elongata*, leaf beetle). Currently, these insects seem to be better adapted to areas north of the 38th parallel where day length exceeds 14hr 45min during the summer (Milbrath et al., 2003). Although these two insects are listed by the Technical Advisory Group for Biological Control Agents of Weeds (TAG) as the most releasable insects, research is still being conducted to determine a more effective insect for regions south of the 38th parallel (DeLoach, Milbrath et al., 2003). Therfore, insect control will not be further analyzed within this EA but the BLM would consider it in the future. Biological control has been underway since 1987, and the expected results from biological control techniques, on *Tamarix* spp., are 75-85% over a 5 to 10 year period (DeLoach, 1996).

2. Mammal Control

The proposed action is to utilize domestic animals like goats to control saltcedar. Goats would be utilized after a cut-stump treatment or prescribed fire to remove/reduce the number of re-sprouts. The BLM would not limit itself to goats but would continue to utilize any approved method of mammal control on saltcedar in the future.

D. Restoration

The proposed action for habitat restoration would include re-seeding and pole planting, where feasible. The re-seeding project would utilize only native vegetation seed from a licensed and approved seed source. Native seed would be applied via a seed spreader from ATV, by hand, or by the use of hydraulic-controlled seed drill and tractor. The BLM would not limit itself to these methods only, but would utilize low-impact methods for the sowing of seed.

Tree pole planting would be conducted by augering to the water table or irrigating until the tree is established. The pole planting would utilize native tree species for the southeastern area of New Mexico. These would include cottonwood, willow species, and New Mexico olive. All seed used would be certified weed free. Only native plants and seed would be used.

E. Alternatives

1. No Action Alternative

The no action alternative would consist of no saltcedar removal, habitat restoration of any type, and water management. This action would not threaten soil disturbance, air quality, threatened and endangered species, and cultural resources. Under the no action alternative the infestation of saltcedar would continue to increase and valuable land, watershed, riparian habitats, and streams/rivers would be lost. The possibility for potential increases in biodiversity on a large scale would not occur. The potential for catastrophic wildfires would increase as a result of the increase in saltcedar densities. Wildland Urban Interface communities, within areas of increasing saltcedar infestation, would be further threatened. Current wetland and agricultural management programs would be hampered. Saltcedar habitat has been forecasted to increase from 500,000 acres to over 900,000 acres, in New Mexico, by 2013. Consequently, the enhancement of riparian habitat for wildlife would become extremely difficult at best. Recreational benefits like wildlife viewing would be hampered by the encroachment of saltcedar and the expulsion of potential wildlife would increase dramatically.

2. Flooding Control Alternative

Flooding of the project area might be a possible alternative following the removal of saltcedar via mechanical means. This could only be accomplished in areas where

historic dams or levees are located and are re-constructed. Therefore, the proposed action of flooding would be to mechanically remove saltcedar followed by a flooding of the stand for 17 to 28 months.

III. Affected Environment

A. General Setting

The proposed action would cover the entire Roswell Field Office (RFO). The RFO encompasses approximately 13.9 million acres of land. It is broken down into approximately 1.49 million BLM land, 295,000 acres of Forest Service, 210,000 acres of Department of Defense, 1.7 million acres of State and 10 million acres of private. Potential affected areas within the RFO are several springs, seeps, playas, ephemeral drainages, streams and rivers.

The climate of the area is generally classified as semi-arid with an average growing season of 195 days (April to October). During the growing season, the daily temperatures average from 55 to 80 degrees Fahrenheit (F). There are frequent highs of 100 degrees F. or more during the summer. Minimum winter temperatures occasionally drop below 0 degrees F. The average annual temperature is 61 degrees F. High winds from the west and southwest are common from March to June. Annual precipitation averages 8 to 12 inches a year. Wide fluctuations of moisture, from year to year, range from a low of about two inches to a high of over twenty inches.

Eighty percent of the annual precipitation occurs as rainfall during the months of June through September. Snowfall averages fluctuate from year to year, and may occur from November through April.

B. Affected Resources

The following resources or values are not present or would not be affected: Prime/Unique Farmland, Minority/Low Income Populations, Wild and Scenic Rivers, and Native American Religious Concerns.

Cultural inventory surveys would continue to be required for federal actions involving surface disturbing activities. The impact of the proposed action and alternatives to minority or low-income populations or communities has been considered and there is no significant impact anticipated.

Any herbicides used as a part of this proposed action are not anticipated to have a siginificant impact as a hazardous/solid waste. Herbicide and herbicide container disposal would follow label requirements. A DRASTIC would be required prior to any herbicide usage.

1. Soils

Detailed information on soil in the Roswell Field Office Area is available in the Soil Survey of Soil Survey of Chaves County, N.M. Northern Part, Soil Survey of Chaves

County, N.M. Southern Part (SCS 1980), Soil Survey of Curry , N.M. (SCS 1953),Soil Survey of De Baca County, N.M. (SCS 1982), Soil Survey of Eddy Area N.M. (SCS 1971), Soil Survey of Lea County, N.M. (SCS 1974), Soil Survey of Lincoln County Area , N.M. (SCS 1980), Soil Survey of Otero Area, N.M. (SCS 1976), Soil Survey of Roosevelt County, N.M. (SCS 1967), and the Soil Survey of Southwest Quay Area, N.M. (SCS 1960). A copy of these publications may be reviewed at the BLM Roswell Field Office or at a local Natural Resource Conservation Service (NRCS). Soil descriptions would be included in the DRASTIC analysis for each pesticide treatment project.

2. Floodplains

Portions of the project area are located in the 100-year floodplain or Zone A or "Area of the 100-year flood". The 100-year floodplain ranges in width from less than one-quarter mile to more than one mile in the project area. For administrative purposes, the 100-year floodplain serves as the basis for floodplain management on public lands. It is based on Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency (1983). Current development on the floodplain consists of two-track roads, oil and gas developments, and miles of fence.

In general, the Pecos River channel is moderately entrenched and slightly confined by the valley. Pecos River Channel banks are relatively stable, but are actively being cut in some locations. This is most likely due to entrenchment of the channel rather than disturbance associated with land use activities. The Pecos River channel material is primarily a sand/silt bed with small to medium debris and the stream gradient is relatively flat (0.25 percent).

The riparian vegetation community is tied to landform within the floodplain and is influenced by flooding intervals. The land form is comprised of exposed and stabilized river bars, the floodplain, and terraces.

3. Areas of Critical Environmental Concern (ACECs)

The Proposed Action and Alternatives would affect three ACECs managed by RFO, Fort Stanton, North Pecos River, and Overflow Wetlands. The 1997 Roswell RMP established these ACECs and outlined management for each, which included salt cedar control treatments. Subsequently, activity plans were developed for Fort Stanton and Overflow Wetlands which elaborated on management details. Each of these ACECs contains floodplains and riparian areas. Discussions of impacts to soils, floodplains and riparian areas are found in these sections of this EA.

4. Water Quality – Drinking/Ground

Fresh groundwater for domestic, irrigation, and stock use can be obtained from deposits of Quaternary Alluvium, Gatuna Formation, Cub Mountain, Mesaverde Group, Mancos Shale, Dakota Sandstone, Chinle Formation, Santa Rosa Formation, Dewey Lake

Formation, Rustler Formation, Salado Formation, Artesia Group and the San Andres Formation. Known depths to water range from 1 foot to approximately 700 feet + (New Mexico Office of the State Engineer data).

Fresh surface water can be obtained from perennial and ephemeral rivers and streams, ephemeral playas, perennial and ephemeral springs, and natural or manmade dirt water holding tanks. The Pecos River and the Rio Bonito River are considered to be perennial rivers.

5. Air Quality

Most of the areas of the proposed action are considered a Class II air quality area. A Class II area allows for moderate amounts air quality degradation. The primary sources of air pollution are dust from blowing wind on disturbed or exposed soils, smoke during prescribed fire events, minimal chemical drift, and exhaust emissions from motorized equipment.

6. Vegetation/Noxious Weeds

Vegetative communities managed by the Roswell Field Office are identified and explained in the RMP/EIS (1997). Appendix 11 of the draft RMP/EIS describes the Desired Plant Community (DPC) concept and describes the components of each community. Range site descriptions are also available for review at the Roswell BLM office or any Natural Resources Conservation Service office.

Typical riparian vegetation along the Pecos River banks include pockets of Baltic rush, threesquare and cattail. Woody vegetation within the lower floodplain include seepwillow, coyote willow, saltcedar, and Russian olive. Alkali sacaton (*Sporobolus airoides*), alkali muhly, and inland saltgrass are the most common grass species. Common forb species include goldenrod (*Solidago* spp.), ragweed (*Ambrosia psilostachya*), Douglas rabbitbrush (*Chrysothamnus viscidiflorus*), prairie sunflower, and white sweetclover (*Melilotus alba*). Older cottonwood trees can be found in several areas and typically occur on higher elevation sandbars and terraces above the active floodplain. Many acres within the floodplain of the river are dominated by saltcedar growing in patches, strips, or dense thickets. A few hundred acres support cottonwood trees with open canopies. Adjacent upland vegetation is mesquite/alkali sacaton shrubland which is encroaching into the floodplain.

Noxious Weeds - A noxious weed is defined as a plant that causes disease or has other adverse effects on the human environment and is, therefore, detrimental to the public health and to the agriculture and commerce of the United States. Generally, noxious weeds are aggressive, difficult to manage, parasitic, are carriers or hosts of harmful insects or disease, and are either native, new to, or not common in, the United States. In most cases, however, noxious weeds are non-native species.

The list currently includes the following weeds: 1) African rue *(Peganum harmala)*, 2) black henbane *(Hyoscyamus niger)*, 3) bull thistle *(Cirsium vulgare)* , 4) camelthorn *(Alhagi pseudalhagi)*, 5) Canada thistle *(Cirsium arvense)*, 6) dalmatian toadflax *(Linaria*

genistifolia dalmatica), 7) goldenrod *(Solidago canadensis)*, 8) leafy spurge *(Euphorbia esula)*, 9) Malta starthistle *(Centaurea melitensis),* 10) musk thistle *(Carduus nutan)*, 11) poison hemlock *(Conium maculatum),* 12) purple starthistle *(Centaurea calcitrapa)*, 13) Russian knapweed *(Acroptilon repens)*, 14) Scotch thistle *(Onopordum acanthium)*, 15) spotted knapweed *(Centaurea maculosa)*, 16) teasel *(Dipsacus fullonum)*, 17) yellow starthistle *(Centaureasolstitialis)*, 18) yellow toadflax *(Linaria vulgaris)*, 19) Russian-olive *(Elaeagnus angustifolia)*, 20) Tamarix species *(Tamarix spp.)*, 21) Siberian elm (.

Of the noxious weeds listed, the ones with known populations in the Roswell Field Office are African rue, non-native Cirsium spp. musk, bull, Scotch thistle and Canada thistle, leafy spurge, goldenrod, Malta starthistle, Russian knapweed, Russian-olive and saltcedar. Tamarix species are listed as noxious weeds by the State of New Mexico. Also "problem weeds" of local concern are cocklebur *(Xanthium strumarium)*, buffalobur *(Solanum rostratum)* and spiny cocklebur *(Xanthium spinosum)*. "Problem weeds" are those weeds which may be native to the area but whose populations are out of balance with other local flora.

Goldenrod is considered a plant of local concern because of its poisonous nature to livestock during the dormant season. Russian-olive is the predominant non-native, invasive species, other than saltcedar, in the immediate area of the proposed project area within the bottomlands. A site specific review would be conducted to assure that no other noxious species are in the immediate area of each proposed project site.

Saltcedar is listed by the State of New Mexico as a Class “C” weed. Additional specific species of weeds can be found in the *Vegetation Treatment on BLM Lands in Thirteen States*, Final Environmental Impact Statement, and it is the policy of the BLM to attempt to eliminate/control the spread of such species as much as possible.

Infestations of noxious weeds can have a disastrous impact on biodiversity and natural ecosystems. Noxious weeds affect native plant species by out-competing native vegetation for light, water and soil nutrients. Noxious weeds cause $2 to $3 billion in estimated losses to producers annually.

These losses are attributed to: (1) Decreased quality of agricultural products due to high levels of competition from noxious weeds; (2) decreased quantity of agricultural products due to noxious weed infestations; and (3) costs to control and/or prevent the noxious weeds.

Furthermore, noxious weeds can negatively affect livestock and dairy producers by reducing palatable forage, or by increasing the occurrence of toxic forage available to livestock. Consequently, noxious weeds will decrease livestock productivity and increase the operator’s costs of feeding and providing health care to entire herds. Increased costs to operators are eventually borne by consumers.

Noxious weeds also affect recreational uses, and reduce realty values of both the contaminated properties and the adjacent properties.

Recent federal legislation has been enacted requiring state and county agencies to implement noxious weed control programs. Monies would be made available for these

activities from the federal government, generated from the federal tax base. Therefore, all citizens and taxpayers of the United States are directly affected when noxious weed control/prevention is not exercised.

7. Wildlife Habitat/Special Status Species

Numerous avian species use the Pecos River corridor during spring and fall migration, including nongame migratory birds. The Bitter Lake National Wildlife Refuge is located within the RFO and serves as a major focal point for migratory birds (e.g., ducks, geese, sandhill cranes, and waterbirds). Common bird species are mourning dove (*Zenaida macroura*), mockingbird (*Mimus polyglottos*), white-crowned sparrow (*Zonotrichia leucophrys*), black-throated sparrow (*Amphispiza bilineata*), blue grosbeak (*Guiraca caerulea*), northern oriole (*Icterus galbula*), western meadowlark (*Sturnella neglecta*), Crissal thrasher (*Toxostoma crissale*), western kingbird (*Tyrannus verticalis*), northern flicker (*Colaptes auratus*), common nighthawk (*Chordeiles minor*), loggerhead shrike (*Lanius ludovicianus*), and roadrunner (*Geococcyx californianus*). Raptors include northern harrier (*Circus cyaneus*), Swainson's hawk (*Buteo swainsoni*), American kestrel (*Falco sparverius*), and occasionally Golden eagle (*Aquila chrysaetos*) and Ferruginous hawk (*Buteo regalis*).

Common mammal species using the RFO include mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocapra americana*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), striped skunk (*Mephitis mephitis*), porcupine (*Erethizon dorsatum*), raccoon (*Procyon lotor*), badger (*Taxidea taxus*), jackrabbit (*Lepus* spp.), cottontail (*Sylvilagus* spp.), white-footed mouse (*Peromyscus leucopus*), deer mouse (*Peromyscus maniculatus*), grasshopper mouse (*Onychomys leucogaster*), kangaroo rat (*Dipodomys* spp), spotted ground squirrel (*Spermophius spilosoma*), and wood rat (*Neotoma* spp.).

A variety of herptiles also occur in the area such as yellow mud turtle (*Kinosternon flavecens*), box turtle (*Terrapene ornata*), eastern fence lizard (*Sceloporus undulatus*), side-blotched lizard (*Uta stansburiana*), horned lizard (*Phrynosoma* spp.), whiptail (*Cnemidophorus* spp.), hognose snake (*Heterodon nasicus*), coachwhip (*Masticophis flagellum*), gopher snake (*Pituophis melanoleucus*), rattlesnake (*Crotalus* spp.), and spadefoot toad (*Scaphiopus* spp.).

Special Status Species

The Bald eagle and the Pecos gambusia are listed as federally endangered with the Interior least tern and Pecos sunflower listed as threatened and the Pecos bluntnose shiner listed as threatened with critical habitat. These five federally listed threatened and or endangered species can occur in or adjacent to or migrate through the project area.

THREATENED AND ENDANGERED SPECIES THAT MAY OCCUR WITHIN THE ASSESSMENT AREA

COMMON NAME	FEDERAL LISTINGS

Bald Eagle	Endangered
Interior Least Tern	Endangered
Yellow-billed cuckoo	Candidate
Southwestern Willow Flycatcher	Proposed Endangered w/ critical habitat
Pecos Bluntnose Shiner	Threatened with critical habitat
Pecos Pupfish	Candidate
Pecos Gambusia	Endangered
Koster's Tryonia	Proposed
Roswell Springsnail	Proposed
Pecos Assiminea	Proposed
Noel's Amphipod	Proposed
Pecos Sunflower	Threatened

A discussion of the primary species of concern follows:

Pecos Bluntnose Shiner *(Notropis simus pecosensis)* - Federal Threatened

Historically, the Pecos Bluntnose Shiner inhabited the river from Santa Rosa to near Carlsbad, New Mexico. Currently, the subspecies is restricted to the river from the Fort Sumner area southward locally to the vicinity of Artesia, and seasonally in Brantley Reservoir (NMDGF 1988; USFWS 1992). Routine fish community monitoring conducted by the USFWS in the river between Sumner Dam and Brantley Reservoir show the fish remains generally abundant, especially in light of cooperative efforts between the Bureau of Reclamation and the USFWS to more closely mimic natural flows in the Pecos River.

There are two designated critical habitat areas on the Pecos River within the RFO area. The first is a 64-mile reach beginning about ten miles south of Fort Sumner (Township 1 North), downstream to a point about twelve miles south of the DeBaca/Chaves County line (Township 5 South). The second reach is from Highway 31 east of Hagerman (Township 14 South), south to Highway 82 east of Artesia (Township 17 South). The allotment does not fall within these reaches.

Pecos Gambusia *(Gambusia nobilis)* - Federal Endangered

The Pecos Gambusia is endemic to the Pecos River Basin in southeastern New Mexico and western Texas. Historically, the species occurred as far north as the Pecos River near Fort Sumner, and south to Fort Stockton, Texas.

Recent records indicate, however, that its native range is restricted to sinkholes and springs and their outflows on the west side of the Pecos River in Chaves County. In spite of population declines, the species remains locally common in a few areas of suitable habitat. Populations on the BLNWR and the Salt Creek Wilderness Area constitute the key habitat of the species in the RFO area. On the refuge, the gambusia is primarily restricted to springs and sinkholes in the Lake St. Francis Research Natural Area.

Interior Least Tern *(Sterna antillarum athalassos)* - Federal Endangered

The Interior Least Tern nests on shorelines and sandbars of streams, rivers, lakes, and man-made water impoundments. Records of breeding terns in New Mexico are centered around BLNWR where the species has bred regularly since it was first recorded in 1949. BLNWR is considered "essential" tern breeding habitat in the state. Besides BLNWR, the only known nesting habitat in the RFO area is an alkali flat due north of the refuge on public lands, and according to the Fish and Wildlife Service, a population has been recorded south of Roswell within the Brantley Reservoir. These are small populations with only a few nesting terns.

Sporadic observations of least terns have been recorded elsewhere in the Pecos River valley. The tern may occur on public lands in Chaves County along the river because suitable nesting habitat is found on sites that are sandy and relatively free of vegetation (i.e., alkali flats). Approximately 44 potential nesting sites are found throughout the RFO area. Other potential habitat sites are saline, alkaline, or gypsiferous playas that occasionally hold water. However, ephemeral playas do not support fish, the main staple for terns.

Specific surveys for nesting least terns have been conducted in potential habitat along the Pecos River and playas by the New Mexico Natural Heritage Program under a Challenge Cost Share project. No other nesting terns have been found to date.

Pecos (Puzzle) Sunflower *(Helianthus paradoxus)* - Federal Threatened

The Pecos Sunflower is found along alkaline seeps and cienegas of semi-desert grasslands and short-grass plains (4,000-7,500 ft.). Plant populations are found both in water and where the water table is near the ground surface.

In the RFO area, the sunflower is found in only a few areas outside of the BLNWR. In 1994, a new population was found growing on the margins of Lea Lake and its outflow at Bottomless Lakes State Park. Lloyd's Draw, east of the Pecos River, has the only known Pecos sunflower population on BLM land, which only became evident following a prescribed fire. Potential habitat also occurs on BLM land within the Overflow Wetlands Area of Critical Environmental Concern (ACEC).

Potential habitat for the sunflower occurs in low lying areas where the water table is near

the ground surface. The low lying areas are not necessarily along the existing river channel, but in old channel courses and oxbows. These areas are now invaded by saltcedar growing in dense stands, which may prevent the viability of the Pecos sunflower. Other potential sites include a few springs on the east side of the river.

8. Cultural and Historical Resources

Archaeological and historic resources are found throughout the Roswell Field Office area of jurisdiction. Saltcedar removal may impact cultural resources depending on the technique used and the location of the activity.

9. Rangeland Management

The public land in the project area is interspersed with BLM designated grazing allotments. Livestock grazing is authorized under current permit only. Prior to any treatment being implemented, close coordination would be conducted with the BLM allottee and any other affected interest to ensure the success of the project.

10. Visual Resources Management

In the interim, visual resource management of the proposed action would be affected due to removal of the salt cedar by whatever method of treatment is applied. In the long term, visual resources would be improved as the treated areas recover producing new growth.

The treatment areas could fall within the following VRM Class zones:

1. Class I: No Visible Change – The objective of this class is to preserve the existing character of the landscape. Only Congressionally authorized areas or areas approved through the MFP/RMP process where the goal is to provide a landscape setting that appears unaltered by man, should be placed in this class. The level of change to the characteristic landscape should be extremely low.
2. Class II: Change Visible but does not Attract Attention – The objective of this class is to retain the existing character of the landscape. The level of change to the character of the landscape should be low. Management activities can be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color and texture found in the predominant natural features of the characteristic landscape.
3. Class III: Change Attracts Attention but is no Dominant – The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
4. Class IV: Change is Dominant, but Mitigated: The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view

and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

11. Cave and Karst Features

Karst terrain consists of numerous sinkholes, disappearing streams and underground drainage systems. In karst areas, erosional processes, which would normally act on the surface, are concentrated below ground. The RFO is interlaced with caves and karsts. Therefore, the potential for a cave/karst to fall within a treatment area is possible. For a detailed table and map of caves or karsts, refer to the RMP/EIS (1997) Appendix 3, Table A3-1 and Map A3-1.

IV. ENVIRONMENTAL IMPACTS

A. Impacts of the Proposed Action

1. Soils

Vegetation treatments may directly affect the physical characteristics of the soils. Vegetation treatments can alter the abundance and types of vegetation that may shield soils from erosion, or alter the presence and abundance of soil microorganisms or larger organisms that contribute to overall soil quality.

MECHANICAL REMOVAL

Chainsaw removal methods of vegetation treatment would create a negligible disturbance to the soils. Chainsaw removal vegetation treatments effects on the soils should be minimal.

Excavator, dozer, and discing treatment methods would directly disturb the soils. These treatment methods would reduce cover by vegetation and would increase runoff and erosion on the watershed. However, these treatments are designed to increase plant cover by encouraging the growth of nontarget species already present of by facilitating re-vegetation. The impacts to soils would be greatly reduced when vegetation cover is reestablished.

NON-MECHANICAL REMOVAL

Prescribed fire would reduce vegetation cover and may temporarily increase runoff and soil erosion. Some soil erosion could occur if storm flow is high in intensity. After vegetation has re-established, soil erosion would diminish due to better protection of the soil by herbaceous vegetative cover.

Herbicide chemical treatments that remove solid stands of vegetation may result in short-term, insignificant increases in surface erosion that would diminish as vegetation reoccupies the treated site. Some of the herbicide chemical may be deposited onto the soil. Although herbicides would not alter a soil's physical properties, there may be

indirect effects on soil microorganisms. Depending on the application rate and the soil environment, herbicides can either stimulate or inhibit soil organisms. When herbicide-treated vegetation decomposes, the resulting addition of organic matter to the soil can support increased populations of microorganisms. Soil microorganisms can metabolize herbicides and often are reported to be responsible for herbicide decomposition (Norris and Moore, 1981). The chemical nature of the herbicides proposed is such that no residue would be left in the soil after approximately three years.

Short term negative impacts to the soil are anticipated from the mechanical clearing of firelines prior to the prescribed burn. The soil should stabilize after vegetation once again regenerates in the bladed areas. Short term negative impacts from burning the vegetation cover would occur until re-growth stabilizes the soil. Long term positive impacts are expected to benefit the soil from an increased herbaceous vegetation cover. Increased cover is expected to also increase water infiltration rates and moisture holding ability. Where soils are disturbed, reclamation measures would be taken. These measures would include returning the land to as near its natural form as possible and reseeding with mixtures of grasses and forbs to prevent erosion.

Biological Controls such as insect and animal control, saltcedar control methods may create a negligible disturbance to the soils. Biological Control saltcedar treatment effects on the soils should be minimal.

2. Floodplains

MECHANICAL REMOVAL

Chainsaw removal methods of vegetation treatment may create a negligible disturbance to the floodplain. Chainsaw removal vegetation treatments effects on the floodplain should be minimal.

Excavator, dozer, and discing treatment methods would directly disturb the floodplain. These treatment methods would reduce cover by vegetation and would increase runoff and erosion on the floodplain. However, these treatments are designed to increase plant cover by encouraging the growth of nontarget species already present of by facilitating re-vegetation. The impacts to the floodplain would be greatly reduced when vegetation cover is reestablished.

NON-MECHANICAL REMOVAL

Prescribed fire would reduce cover by vegetation and would increase runoff and soil erosion on the floodplain. Some soil erosion could occur if storm flow and flooding is high in intensity. After vegetation has re-established, soil erosion on the floodplain would diminish due to better protection of the soil and the floodplain by herbaceous vegetative cover.

Herbicide treatments that remove solid stands of vegetation may result in short-term, insignificant increases in surface erosion to the floodplain that would diminish as vegetation reoccupies the treated site. The floodplain may be affected or impacted by

accidental direct application or drift or after treatment through surface runoff. The impacts to the floodplain would be greatly reduced when vegetation cover is reestablished.

Biological Controls such as Insect and mammal saltcedar control methods would create a negligible disturbance to the floodplain. Biological Control saltcedar treatment effects on the floodplain should be minimal.

3. Areas of Critical Environmental Concern (ACECs)

The Roswell RMP states each of the ACECs (Fort Stanton, North Pecos River and Overflow Wetlands) would have salt cedar treatments using prescribed fire, mechanical control (chainsaws) or chemicals, except that chemicals will not be aerially applied. The RMP and the Overflow Wetlands activity plans specify no number of acres for salt cedar treatment. Instead, both documents state salt cedar treatments would occur where needed.

The Proposed Action and Alternatives conforms to the salt cedar management prescriptions found in the RMP and the activity plans. A discussion of impacts to soils and riparian areas is found elsewhere in this EA.

4. Water Quality – Drinking/Ground

a. Surface Water:

MECHANICAL REMOVAL

Chainsaw removal methods of vegetation treatment may cause negligible negative effects to the surface water quality. Chainsaw removal vegetation treatments effects on the surface water quality should be minimal.

Excavator, dozer, and discing treatment methods would create a temporary loss of vegetation cover which may result in increased erosion and higher sedimentation from high-intensity summer thunderstorms; however erosion from winter snow and gentle rainfall will be limited. These treatment methods would reduce cover by vegetation and would increase runoff and erosion on the watershed which may increase sediment transport and yield. However, these treatments are designed to increase plant cover by encouraging the growth of nontarget species already present of by facilitating re-vegetation. The impacts to surface water would be greatly reduced when vegetation cover is reestablished naturally or by reseeding.

NON-MECHANICAL REMOVAL

Prescribed fire may increase stream nutrients, stormflows, and sediment loads. Slash burns may produce minor increases in concentrations of some nitrogen compounds and cations; however, drinking water standards should not be exceeded even by severe burns. Underburns and grassland burns would have no significant effect on nutrients. After the

proposed fire, short term negative impact would occur after a precipitation event that produces stream flow. Ash may be suspended in the flow and deposited in downstream locations, such as perennial and ephemeral rivers and streams, ephemeral playas, perennial and ephemeral springs, and natural or manmade dirt water holding tanks. Some soil erosion could occur if the stream flow is high in intensity. Short term negative impacts to surface water would occur from increase sediment transport and yield. After vegetation has re-established, water quality should stabilize or increase due to better protection of the soil by herbaceous vegetative cover.

Herbicides may enter streams during treatment through accidental direct application or drift, or after treatment through surface or subsurface runoff. To pollute the water, the Herbicide must be present in the water at concentrations high enough to impair water quality at a point of use. Direct application of herbicides to surface water may occur if aircraft accidentally fly over streams, lakes, or ponds during pesticide application. Drift of herbicides into surface water would depend on the application method, existence of buffer zones, and the weather. Buffer zones reduce drift impacts on sensitive areas, while wind increases drift impacts. After treatment, herbicides may enter streams by subsurface flow or by movement in ephemeral channels. For herbicides other than Habitat, mitigation requires buffers of 100 feet (aerial), 25 feet (ground-vehicle), and 10 feet (ground-hand), and nozzles producing large (200-micron) droplets be used. Impacts from Herbicides other than Habitat would be minimal in perennial and intermittent streams because they are protected by 10-foot (ground-hand), 25 foot (ground-vehicle), and 100-foot (aerial) buffers. The herbicide Habitat in use on cut stump treatments and the hand spraying of salt cedar may directly come into contact with surface water. Applications of Habitat may be made to control undesirable wetland, riparian and terrestrial vegetation growing in or around surface water when applications may result in inadvertent applications to surface water. The cut stump treatment consists of a dilute solution of Habitat that is sprayed or brushed onto the cambium area of the freshly cut stump surface, where directional spraying techniques would be utilized to prevent spray from reaching the soils or surface water. The hand spray treatment would be selectively applied by using low volume directed application techniques, where a portion of the spray would be applied to the soil. Applications of Isopropylamine salt of Imazapyr (2-[4,5-dihydro-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid) (TRADE NAME: Habitat) may be made to public waters such as ponds, lakes, reservoirs, marshes, bayous, drainage ditches, canals streams, rivers, and other slow-moving or quiescent bodies of water for control of aquatic weeds or for control of riparian and wetland weed species. It may be applied to aquatic sites that include lakes, rivers, streams, ponds, seeps, drainage ditches, canals, reservoirs, swamps, bogs, marshes, estuaries, bays, brackish water, transitional areas between terrestrial and aquatic sites and seasonal wet areas. Label precautions would be used to manage off target movement such as spray drift onto surface water. Spray drift may contact surface water which is allowable under the product label. Habitat label precautions would be used to mitigate potential impacts to drinking potable water supplies and irrigation water supplies.

Biological Controls such as Insect and mammal saltcedar control methods would not degrade surface water quality. Biological Control saltcedar treatment effects on surface water quality should be minimal.

b. Ground Water:

MECHANICAL REMOVAL

Chainsaw removal methods of vegetation treatment may cause negligible negative effects to ground water quality.

Excavator, dozer, and discing treatment methods would create a temporary loss of vegetation cover which may result in increased percolation of precipitation to ground-water sources. The increase in ground water recharge would be reduced when vegetation cover is reestablished naturally or by reseeding.

NON-MECHANICAL REMOVAL

Prescribed fire may increase stream nutrients, stormflows, and sediment loads. Slash burns may produce minor increases in concentrations of some nitrogen compounds and cations; however, drinking water standards should not be exceeded even by severe burns.

Herbicides, after treatment, may move through the soil and into underlying ground-water aquifers by leaching. To pollute ground water, they must then move laterally at concentrations high enough to impair water quality at a point of use. Key factors affecting peak concentration are herbicide properties, soil, depth to water table, and the distance to the point of use. For any site proposed for pesticide (herbicide) treatment, the potential for groundwater contamination will be evaluated with the Environmental Protection Agency (EPA) rating system, DRASTIC (Aller et al. 1985). If the site proposed for treatment has a DRASTIC index greater than 100, it has a moderate to high potential for groundwater contamination, and would require a more detailed analysis prior to a decision being made on the proposed treatment. Factors that would be studied further include: pesticide solubility, mobility, speciation, and degradation, and highly localized recharge areas. A DRASTIC analysis for the entire Roswell Field Office Area has not been performed or incorporated into this EA. Therefore, a detailed DRASTIC analysis would be prepared for all pesticide treatment projects developed under this EA prior to pesticide treatment project implementation and prior to a decision being made on each of the proposed pesticide treatments. Potential ground water quality impacts are assessed before each pesticide treatment application. Surface water is hydraulically connected to groundwater, however Imazapyr (Habitat) has low persistence in water (half life of 7 to 14 days in water) which would lower the potential for groundwater contamination when Habitat is used. Site specific DRASTIC analysis and pesticide treatment plans would be prepared and implemented for each pesticide application project. Known groundwater well sites would be excluded from treatment areas. Pesticide treatment applications will only be permitted if it is determined in the DRASTIC analysis that the actual risk of ground water contamination appears to be low for described and specified reasons.

Biological Controls such as Insect and mammal saltcedar control methods would not degrade groundwater quality. Biological Control saltcedar treatment effects on surface water quality should be minimal.

5. Air Quality

Air quality would temporary be impacted with pollution from vehicle exhaust emissions, noise, and dust that would be caused by the motorized equipment used to treat the saltcedar. Dust dissemination would discontinue upon completion of the motorized treatments of the saltcedar. Air pollution from the motorized equipment would discontinue at the completion of the motorized treatments of the saltcedar. Noise from motorized equipment would discontinue at the completion of the motorized treatments of saltcedar. The winds that frequent the southeastern part of New Mexico generally disperse the odors and emissions. The impacts to air quality would be greatly reduced as the motorized treatments of saltcedar are completed. Federal, State and local air quality regulations would not be violated.

6. Vegetation/Noxious Weeds/Riparian-Wetlands

The success of natural reseeding, generally of local grass species, in the project areas would come largely from the existing plant communities found on the range sites that are in good condition. Sound grazing management practices, such as proper grazing use and deferred grazing, would need to be a part of a long term management plan for the project areas. Grazing management would be essential to insure the heath and vigor of the remaining native vegetation. This native vegetation would be an important seed source for revegetation. Natural revegetation would be a slow process.

The selection of plant materials to be seeded and planted would take wildlife into consideration. Wildlife upland habitat management would be planned to assure that the food and cover needs for the widest variety of wildlife are met.

Any vegetation treatments would have beneficial and adverse effects on terrestrial vegetation within the areas. Target (saltcedar) and non-target vegetation in treated areas would be directly affected. The overall effect of treating vegetation would be to achieve the desired successional stage, and to create reliable forage and browse source for wildlife and livestock.

Densities of the dead salt cedar and Russian-olive and re-sprouted plants would be lowered. By reducing the salt cedar and Russian-olive component, herbaceous species would gain in densities after adequate precipitation occurs. Herbaceous species tend to have abundant seed which germinate and mature more rapidly than woody species or succulents.

All vegetation would be temporarily negatively impacted after burning. The herbaceous species would respond within one growing season with adequate precipitation to a level which may exceed pre-burning levels. However, not all of the targeted species would be burned completely or at all. This should lead to a natural mosaic in the area of shrubs, grasses and forbs.

The change in composition of the vegetative community would have the effect of changing the entire area of treatment from a salt cedar and Russian-olive-infested floodplain habitat to a more open grassland/cottonwood habitat in a relatively short period of time (approximately two to three years).

MECHANICAL REMOVAL

Mechanical control of saltcedar would impact all existing plant vegetation in the area of treatment. Range seeding may be necessary on all areas following large scale/high impact mechanical control such as dozer removal. Discing offers some advantage in that the operation helps to prepare a seed bed for seeding, but the problems associated with range seeding such as soil types, species selection, salinity, and precipitation still remain.

To insure the success of the seeding, a follow-up program with herbicides would be necessary to control resprouts of saltcedar and competition from kochia, russian thistle and other annuals. Deferred grazing would need to be carried out until such time that a stand of grass is established. Proper grazing use and deferred grazing would need to be a part of the grazing management plan to maintain the grass stand. Mechanical treatment that involves ground disturbance may lead to accelerated erosion from wind and water. Depending on the success of the seeding, this could be a short lived situation or one that could persist for several years.

NON-MECHANICAL REMOVAL

Annual plants are generally more sensitive than perennial plants to chemical treatments because they have limited food storage organs and annual plant populations are greatly reduced if plants are killed before producing seed. Perennials are most sensitive when exposed to herbicides during periods of active growth. Exposure to herbicides during active growth and before plants become reproductive also would have the greatest negative effect on populations of many annuals. The ability of annual or perennial plants to maintain viable seeds in the soil for several years reduces their susceptibility to herbicides. Control of some woody plants on some sites may open the community to the dominance by annuals (Evans and Young, 1985).

Susceptibility of perennial plants to herbicides depends largely on their ability to re-sprout after aerial shoots are damaged. Plants that have the ability to re-sprout after aerial shoot damage are generally least sensitive to herbicides. These plants are damaged most when exposed to herbicides when translocation to meristematic areas and to roots occurs (Sosebee, 1983). This generally occurs only when soil temperatures are adequate for root activity and soil water is available. These plants are generally more susceptible to soil-active herbicides, such as clopyralid and triclopyr, that persist in the soil long enough to be taken up when optimum translocation conditions occur. Differences in active growth periods and phenology of nontarget and target species that correspond to differences in sensitivity to herbicides can be used to minimize damage to non-target species.

Damage to nontarget species is minimized if herbicides are applied at the label approved

rate. The compound of imazapyr should not be allowed to come in contact with cotton, grapes, peanuts, soybeans, tobacco, vegetable crops, flowers or other desirable broadleaf plants by either direct application or by drift. There is an estimated 90% or greater mortality on saltcedar using combinations of the proposed treatments in conjunction with herbicide. This reduction of saltcedar would reduce the competition for soil moisture, which would allow the growth of more desirable plant species for livestock and wildlife. Furthermore, with an aggressive restoration program in place native plant species establishment would be enhanced.

A temporary negative impact on vegetation would occur after burning. The herbaceous species would respond within one growing season with adequate precipitation to level which may exceed pre-burning levels. However, vegetative impact would be a direct correlation to the type of burning (i.e. broadcast burns would positively or negatively impact all vegetation within the burn area, but pile burns would affect only the vegetation in and directly around the pile). Either one should lead to a natural mosaic in the treatment area of shrubs, grasses and forbs.

Noxious Weeds – Cattle stocked on the allotment, supplemental feeds, and a variety of equipment may unintentionally contribute to the establishment and spread of noxious weeds. Noxious weed seeds could be carried onto the allotment by livestock, feed and equipment. The main mechanism for seed dispersion is by equipment previously used in noxious weed-infested areas.

Infestation of noxious weeds can have a potentially disastrous impacts on biodiversity and natural ecosystems. In order to combat the negative effects of noxious weeds on crop lands, grazing lands and waterways, herbicidal and other weed control strategies can be implemented at further costs to producers and government agencies. Increased cost to producers are eventually borne by consumers. The potential for the dissemination of invasive and noxious weed seed on public lands would remain low on the allotment due to the limited use of the lands and increased public awareness of the noxious weed problem. The requirement of washing equipment would reduce the potential for infesting the project area. Any populations of noxious weeds found on the allotment would be treated according to prescribed control methods for the particular species encountered.

7. Wildlife Habitat/Special Status Species

Numerous avian species use the Pecos River corridor during spring and fall migration, including nongame migratory birds. The Bitter Lake National Wildlife Refuge is located within the RFO and serves as a major focal point for migratory birds (e.g., ducks, geese, sandhill cranes, and waterbirds). Common bird species are mourning dove (*Zenaida macroura*), mockingbird (*Mimus polyglottos*), white-crowned sparrow (*Zonotrichia leucophrys*), black-throated sparrow (*Amphispiza bilineata*), blue grosbeak (*Guiraca caerulea*), northern oriole (*Icterus galbula*), western meadowlark (*Sturnella neglecta*), Crissal thrasher (*Toxostoma crissale*), western kingbird (*Tyrannus verticalis*), northern flicker (*Colaptes auratus*), common nighthawk (*Chordeiles minor*), loggerhead shrike (*Lanius ludovicianus*), and roadrunner (*Geococcyx californianus*). Raptors include northern harrier (*Circus cyaneus*), Swainson's hawk (*Buteo swainsoni*), American kestrel (*Falco sparverius*), and occasionally Golden eagle (*Aquila chrysaetos*) and Ferruginous

hawk (*Buteo regalis*).

Common mammal species using the RFO include mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocapra americana*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), striped skunk (*Mephitis mephitis*), porcupine (*Erethizon dorsatum*), raccoon (*Procyon lotor*), badger (*Taxidea taxus*), jackrabbit (*Lepus* spp.), cottontail (*Sylvilagus* spp.), white-footed mouse (*Peromyscus leucopus*), deer mouse (*Peromyscus maniculatus*), grasshopper mouse (*Onychomys leucogaster*), kangaroo rat (*Dipodomys* spp), spotted ground squirrel (*Spermophius spilosoma*), and wood rat (*Neotoma* spp.).

A variety of herptiles also occur in the area such as yellow mud turtle (*Kinosternon flavecens*), box turtle (*Terrapene ornata*), eastern fence lizard (*Sceloporus undulatus*), side-blotched lizard (*Uta stansburiana*), horned lizard (*Phrynosoma* spp.), whiptail (*Cnemidophorus* spp.), hognose snake (*Heterodon nasicus*), coachwhip (*Masticophis flagellum*), gopher snake (*Pituophis melanoleucus*), rattlesnake (*Crotalus* spp.), and spadefoot toad (*Scaphiopus* spp.).

MECHANICAL REMOVAL

Mechanical treatments are designed to increase and decrease other vegetation components for the benefit or exclusion of different groups of wildlife species which are associated with different types of habitat. This usually has a temporary effect on all wildlife species.

Removal of salt cedar from the riparian community would also remove the vertical structure of vegetation currently found along the river. This would likely affect bird species seeking cover and perches while traversing through the area either yearlong or seasonally. Therefore, whenever T&E species are located within the project area, efforts to mitigate the habitat structure would be considered. Closed-in streambanks along the Pecos River is likely to be favorable to certain animal species and unfavorable to others. The change in vertical structural diversity may have an effect on mostly avian wildlife populations. Some negative impacts can be lessened if the period of treatment avoids the bird nesting season and other critical seasons when loss of cover would be critical to wildlife; for example, during critical reproductive periods (from April to June).

Mechanical treatment would have a temporary effect on all wildlife species in the area due to noise and physical removal of vegetation. Negative impacts would be lessened since the period of treatment avoids the bird nesting season and other critical seasons when loss of cover would be critical to wildlife; for example, during critical reproductive periods (from April to June).

Impact to wildlife would naturally be short term following the prescribed burn. As with any fire, whether natural or man caused, some mortality of small animals, reptiles and birds would occur, especially if they seek salt cedar piles as cover. In most cases, wildlife would be displaced in the short term by the fire and the loss of surrounding vegetation and then would return when vegetation begins to grow back. Some shift of wildlife may occur within the burned areas. Species favoring dense, heavy brush may

vacate the area, while species favoring open or savannah type habitat may inhabit the area. Some piles would be left as habitat to mitigate the loss of vertical structure which adds to habitat diversity.

After treatment of salt cedar and Russian olive, the increase of forb and grass species would most likely lead to an increase in use of the treated areas by wildlife species that prefer a grassland type, such as mule deer which in turn could lead to an increase in the number of hunters using the area. The recreational value would correspond to the availability of animals for hunting or viewing.

NON-MECHANICAL REMOVAL

Chemical treatments traditionally have been applied most frequently to decrease woody plant cover and increase the production of grasses. The control of woody plants, especially by selective herbicides, often results in the initial control of associated broadleaf forbs; both categories of plants contain species which may be important food for many different wildlife species.

Chemical treatments are designed to increase and decrease other vegetative components for the benefit or exclusion of different groups of wildlife species which are associated with various types of habitat. This usually has a temporary effect on all wildlife species. Enhancing the structural diversity of vegetation by controlling shrubs and increasing under story species in a mosaic pattern should increase bird diversity. Some negative impacts can be lessened if the period of treatment avoids the bird nesting season and other critical periods when loss of cover would be critical to wildlife; for example, during vital reproductive periods (from April to June).

Impact to wildlife would naturally be short term following the prescribed burn. As with any fire, whether natural or man-caused, some mortality of small animals, reptiles and birds would occur. In most cases, wildlife would be displaced in the short term by the fire and the loss of vegetation and then would return when vegetation begins to grow back. Some shift of wildlife may occur within the burned areas. Species favoring dense, heavy brush may vacate the area, while those favoring open or savannah type habitat may inhabit the area.

After treatment of saltcedar, the increase of forbs and grass species would most likely lead to an increase in use of the treated areas by wildlife species that prefer a grassland type, such as pronghorn and mule deer which in turn could lead to an increase in the number of hunters in the area. The recreational value would correspond to the availability of animals for hunting or viewing.

The use of aircraft to apply the herbicide could temporarily cause noise levels to reach 90 dbA; however, no long-term effects are anticipated.

Due to the area limitations of insect within the proposed action, insect impacts will not be analyzed within this EA.

Special Status Species

There would be no direct effect to listed and proposed species or their habitat. An indirect and long term effect may be an increase of groundwater availability to the Pecos River. This would be an immeasurable result but possible nonetheless as the reduction of salt cedar and improvement of range condition would improve the subwatershed condition within the area. Because of the potential beneficial impact to T/E species, a determination of May Affect But Not Likely To Adversely Affect is made for all listed species. Where populations of status species are located, a site-by-site survey and consultation with the Fish and Wildlife Service would take place under Section 7.

8. Cultural and Historical Resources

Significant archaeological and historic sites must be avoided or archaeologically treated prior to surface disturbing activities. In order to locate these sites a cultural inventory survey is undertaken before the proposed activity can occur. There is little chance of finding in situ cultural material within a 100 year floodplain. A map of the proposed activity will be given to cultural resources in order for a records check to be performed before the undertaking commences in order to determine if any previously recorded sites should be avoided. In these areas, with the New Mexico State Historic Preservation Officer's concurrence, there will likely be no cultural survey requirement. Therefore, surface disturbing activities would generally be allowed to proceed.

Where the proposed activity is an herbicide treatment, the only cultural requirement would be a map of the treatment area. Depending on the chemical treatment, archaeological dating techniques can be affected.

In the case of prescribed fire, a map of the proposed fire would be required by cultural resources along with details as to whether there would be surface disturbance created for fire lines, etc. Surface disturbance outside of the floodplain will likely require a cultural inventory survey. A map will also allow a cultural records check to see if there are previously recorded sites that might be impacted by the fire and would require site avoidance measures.

In areas where mechanical removal of saltcedar is planned outside of a 100-year floodplain, it is likely that a cultural inventory will be required and significant archaeological and historic sites would have to be avoided or archaeologically treated prior to the undertaking. Details and a map of the project would be given to cultural resources so a strategy can be developed concerning cultural resources.

9. Rangeland Management

Chemical treatments are generally applied in a form at such low rates that they do not affect livestock. Herbicide applications would be made when livestock are not in the pastures.

Using herbicides, according to EPA labeling, is the most efficient and effective way to

control some competition between native vegetation and noxious weeds. Application of herbicides would be conducted according to the label and approved regulations.

Grazing would occur in the project areas following the re-establishment of native vegetation. Continued pasture rotation of cattle and reduction of overall livestock numbers during drought would ensure longevity of the project.

10. Visual Resources Management

The proposed action would change the color and texture of the landscape by partially replacing the saltcedar infested areas with grasses, forbs, and native trees. A mosaic of vegetation with irregular edges would be produced providing variety in color, form and texture. In the long term (in excess of one year following each treatment) increased lush plant growth and diversity would tend to change the visual character of the area in a positive manner.

The treatment areas could fall within the following VRM Class zones:

- Class I: No Visible Change – The objective of this class is to preserve the existing character of the landscape. Only Congressionally authorized areas or areas approved through the MFP/RMP process where the goal is to provide a landscape setting that appears unaltered by man, should be placed in this class. The level of change to the characteristic landscape should be extremely low.
- Class II: Change Visible but does not Attract Attention – The objective of this class is to retain the existing character of the landscape. The level of change to the character of the landscape should be low. Management activities can be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color and texture found in the predominant natural features of the characteristic landscape.
- Class III: Change Attracts Attention but is no Dominant – The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- Class IV: Change is Dominant, but Mitigated: The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

11. Cave and Karst Features

Every effort will be used to protect the cave/karst features located within the proposed action area. Burning around the location will be kept to a minimum to reduce any residual affects. Limiting vehicle access near the known sites would reduce disturbance.

Chemical treatment near cave/karst features should be avoided to prevent chemical infiltration into the cave/karst system. Chemical treatments would not be applied within two hundred meters of a known cave or karst feature. In areas where chemicals are applied, precautions would be taken to prevent chemical introduction into a cave/karst feature due to run off of rain or snow.

In the event that mechanical treatment is the method used in the treatment area, caution and safety is the key concern. Some cave ceilings are close to the surface therefore providing a danger of heavy equipment break through. Safety of the operator would take precedence when applying mechanical treatment options.

B. Impacts of the Alternatives

Under the no action alternative, saltcedar would continue to infest public and private land. Impacts of saltcedar would include the reduction of land use by recreation, wildlife, ranching, and hunting. Soil salinity degradation would increase as saltcedar leaves continue to excrete salt that is removed from deep in the substrate. Salinity loading will also continue in rivers, streams, and lakes as run-off carries the salt deposit into water-ways. Avian communities would be either forced out by lack of sustenance or overcrowding of saltcedar and the eventual loss of surface water. Currently, the insect community has been altered with the introduction of saltcedar, and it will be further impacted as saltcedar increases its' surface area/density. Surface and subsurface water levels would also continue to be impacted by the increase of saltcedar density and the evapotranspiration that occurs as a result.

C. Mitigation Measures and Residual Impacts

1. Proposed Action:

Impacts to the following resources and values would not be mitigated under any alternative and are considered to be residual impacts:

- Short-term reduction in air quality from dust, engine emissions, and increased noise levels resulting from the equipment being used in the implementation of the proposed action. Short term reduction in air quality from smoke and ash on burn days and for a few days following the burns will occur.

- Short-term change in chemical composition of the uppermost soil layers due to the change in abundance of organic matter.

- Long-term percentage changes in diversity of already occurring wildlife species.

- Long-term changes in vegetative composition/diversity within the treated area.

- The RFO Wildlife Biologist may determine that a species survey of each proposed treatment area may be required. In most cases, the amount of land left untreated in the vicinity of the project area will adequately serve the habitat needs of the wildlife in the area. No mitigating measures are needed. Furthermore, consultations under Section 7 may be required with the Fish and Wildlife Service.

- The RFO archaeologist may require that significant archeological and historic sites be avoided.

- To avoid impacts to the oil and gas industry and to allow for safety, all oil and gas operators and right-of-way holders will be contacted prior the start of any eradication regardless of method used.

No additional mitigating measures would be needed if the standard operating procedures and design features previously discussed are adhered to. No additional mitigating measures would be needed as long as the removal of saltcedar and subsequent prescribed burns stay within the parameters set forth in the Proposed Action and Burn Plan.

2. No Action Alternative:

No impacts would be observed within the environment, under the no action alternative. Furthermore, there would be no residual impacts other than the continued infestation of saltcedar.

D. Cumulative Impacts

Other range improvements such as water wells, pipelines and ranch roads have been constructed within the area of the proposed action via private and government funding. Currently, the Bureau of Land Management has manipulated saltcedar on public and some limited private land through government funding. The possibility of saltcedar manipulation through mechanical, biological, herbicidal applications, and prescribed burning on additional public and private land within the RFO would be considered in the future.

Any cumulative impact of the proposed treatment of saltcedar on wildlife would be dissipated by the condition of the surrounding treated areas outside of the actual treatment area. The treated areas would have the effect of creating a more diverse vegetative composition. This composition would consist of an increase in grass cover, forbs, and native trees. Wildlife would utilize the different areas at varying levels for feeding, protection, cover and reproduction.

Long lasting effects of chemicals on wildlife would not occur according to the EIS on Vegetation Treatment on BLM Lands in Thirteen Western States (1991) and by research conducted by BASF (2003). The currently approved herbicides are non-carcinogenic and non-mutagenic.

V. PERSONS OR AGENCIES CONSULTED

The following people or agencies have been consulted for their comments in regards to the proposed action. The comments and suggestions expressed during the consultation have been incorporated into this EA.

New Mexico State Land Representative for the Roswell Field Office
New Mexico Department of Game and Fish
New Mexico State Forestry Division
USDI Fish and Wildlife Service
USDA Forest Service
Bureau of Land Management
US Department of Defense

Participating Staff of the Bureau of Land Management:

Michael McFerraz – Fuels Crew Module Leader, BLM
Alan Wyngaert – Fuels Specialist, BLM
Chuck Schmidt – Fire Management Officer, BLM
Joseph Navarro – Rangeland Management Specialist, BLM
Helen Miller – Rangeland Management Specialist/Weed Specialist, BLM
Dan Baggao – Wildlife Biologist, BLM
Rand French – Wildlife Biologist, BLM
Michael McGee – Hydrologist, BLM
Paul Happel – Recreation Specialist, BLM
Pat Flanary – Archeologist, BLM
Irene M. Gonzales – Realty Specialist, BLM
Jerry Dutchover – Geologist, BLM
John Simitz – Geologist, BLM

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